Health Care Information Systems

Outline

- Administrative vs. clinical information systems
- Brief history of health care information systems
- Electronic (EHR) and personal (PHR) health records
- EHR adoption rates
- Value of EHR systems
- Key issues related to EHR systems

Definitions

- Information System (IS)
- Information Technology (IT)
- Provider Organization
- Electronic Health Record (EHR)
- Personal Health Record (PHR)

Characteristics: Two primary information systems

- Administrative
  - Charge capture
  - Coding and documentation review
  - Managed care contracting
  - Denial management of claims
  - Payment posting
  - Accounts receivable follow-up
  - Patient Collections
  - Reporting and benchmarking

- Clinical
  - Departmental systems
  - Decision support
  - Medication administration
  - Provider order entry
  - EHR systems
  - Can be limited to a single area or comprehensive over all aspects of patient care

Features and Functions: Electronic Health Records

- Electronically collect and store patient data
- Supply information to providers
- Allow direct input into a computerized provider order entry (CPOE) system
- Advise health care practitioners
  - Best practice guidelines

Patient Portals

- Secure website
- Electronically access their records
- Schedule appointments
- Communicate with provider
- Request refill on prescriptions
- Review test results
- Pay bills
Personal Health Records

- Receive customized content based on needs, values, and preferences
- Lifelong, comprehensive, support information exchange and portability
- Reduce costs by avoiding unnecessary duplicate tests and improving communications
- Person-generated health data (PGHD)
  - Mobile technologies and applications to capture health and wellness
  - Step trackers, web-based food diaries, networked weight scales, blood pressure machines

EHR Adoption Rates

- 84% of US nonfederal acute care hospitals had adopted basic EHR systems by 2015
- Adoption rates for specialty hospitals is lower because they were not eligible for HITECH incentive programs
- 79% of primary care physicians and 70% of surgical specialties had adopted a certified EHR system by 2014
- 44% of home health and hospice agencies have adopted EHR systems

ONLINE SURVEY

Benefits: EHR systems

1. Quality, outcomes, and safety
   - Adherence to evidence-based care
   - Enhanced surveillance and monitoring
   - Decreased medication errors
2. Efficiency, improved revenues, and cost reduction
3. Provider and patient satisfaction

Key Issues & Challenges 1: HCIS - Interoperability

- The ability of a system to exchange health information from other systems without special effort on the part of the user
- Information blocking
- ONC Roadmap to Interoperability
  - Requiring standards
  - Motivating the use of standards through appropriate incentives
  - Creating a trusted environment for collecting, sharing, and using electronic health information

Key Issues & Challenges 2: HCIS - Usability

- The effectiveness, efficiency, and satisfaction with which the intended users can achieve their tasks in the intended context of product use
- UX: User Experience
  - https://tidepool.org/
Key Issues & Challenges 3: HCIS - Health IT Safety

- Includes
  - adverse events that reached the patient
  - near misses that did not reach the patient
  - or unsafe conditions that increase the likelihood of a safety event
- Measuring, monitoring, and creating an environment that is conducive to detecting, fixing, and learning from system vulnerabilities
- BUGS in IS/IT is inevitable
  - Consequences

Assignment 3

- At least 2 research articles
- Total of at least 5 sources including the 2 research articles
  - Add this in the appendix (first 15 pages. Add link to full source.)
- May be group project up to 3 people
- I will use turn it in

Logistics

- Survey: HIPAA
- Presentation Schedule
  - Next week our first guest: DFWHC
  - Next week
    - Read Chapter 4
    - Quiz 3
    - Start on Assignment 3 (2 weeks)

Discussion groups

- Make slides in public space
- Each group will take turns presenting (10 min= 8 present / 2 Q&A)

History and Evolution

**Internet of Things (IoT)**
- Wireless devices
- Content: semantic web
- Search Engine: easy to "index"/find documents on WWW
- Browser: graphical browser, possible for non-experts to use WWW
- WWW: using Internet (physical network) to have a large number of computers talking to each other using HTTP protocol
- Internet: TCP/IP - packet-based WAN using TCP/IP
- Network: group of computers inter-operating
- Computers: how does it work

**Summary: Evolution of The Web**

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<th>Presence</th>
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<td>Publish Information</td>
<td>Process Transactions</td>
<td>Digital Economy</td>
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<td>Collection of Static Documents</td>
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**IoT (Internet of Things)**
- The inclusion of electronics and software in any device not usually considered computerized in nature
- To enable it to achieve greater value and service
  - by giving it an ability to network and communicate with other devices,
  - each item is uniquely identifiable through its embedded computing device
  - but is able to interoperate within the existing Internet infrastructure
- Example: home health

**Summary**
- Two main health care information systems
  - Administrative
  - Clinical
- Brief history of health care information systems
- Electronic health records (EHR)
- Personal (PHR) health records
- Patient Portals
- EHR adoption rates
  - Higher for those eligible for HITECH incentives
- Value of EHR systems
  - Safety
  - Revenue
  - Satisfaction
- Key issues related to EHR systems
  - Interoperability
  - Usability
  - Health IT Safety